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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/782,029	02/14/2001	Jae-Ho Moon	P56310	8245

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EXAMINER
HUFFMAN, JULIAN D

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 03/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/782,029	MOON ET AL.	
	Examiner	Art Unit	
	Julian D. Huffman	2853	

-- The MAILING DATE of this communication appears n the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 January 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) *23-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22 and 26-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 February 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

El ction/Restrictions

1. Claims 23-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected group, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 6.

Applicant's election with traverse of the restriction requirement is acknowledged.

Applicant argues that there is no evidence suggesting that laser ablation is a viable or preferred method for making inkjet printheads.

Applicant argues that laser ablation could not be used to form the invention shown in figs. 12, 17 and 21. The claimed invention specifies etching to form channels and holes in the channels. The prior art clearly teaches that laser ablation is a method useful for forming channels and holes in channels. U.S. Pub. No. 2002/021327 A1 by Ingham (see [0003]) and U.S. Pub No. 2002/0008741 A1 by Temple et al. (see [0040]) are cited to support the aforementioned.

Applicant argues that laser ablation could not be used to mass produce the invention. Firstly, the limitation of mass production was not originally disclosed and raises the question of new matter. Secondly, it is illogical to state that an ink jet head is mass produced. Mass production involves the production of multiple ink jet heads, here only one head is claimed. Further, applicant does not claim a method for manufacturing a plurality of ink jet printheads, rather, a method for mass production of a single ink jet printhead is claimed. For all of the reasons above, this argument is not persuasive.

Applicant argues that laser ablation is a form of etching. The disclosure does not teach etching of the ink jet printhead, which raises 35 USC 112 1st. paragraph issues. Further, the examiner had no basis from the applicant's disclosure to facilitate an understanding of this term and therefore the examiner was forced to consider what the term would suggest to one having ordinary skill in the art. In the prior art, the term etching is not used to suggest the use of a laser. In the prior art, laser ablation is used, never laser etching, and etching is never used to suggest laser ablation.

Applicant's argument that laser ablation is not a useful and widespread alternative to etching is not persuasive as recently filed applications still use this process to make ink jet printheads, see the aforementioned published applications.

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

2. Claims 1, 15 and 22 are objected to because of the following informalities: line 7 of claim 1 is mistyped, in line 3 of claim 15, the word said should be changed to side and in line 3 of claim 22, the word said is mistyped.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 26-34 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification does not describe mass producing an inkjet printhead, or using etching in the manner claimed.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 6 and 26-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 6, there is insufficient antecedent basis for the term said chamber orifice.

In claim 26-34, it is not clear as to how a single inkjet printhead may be mass produced.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

8. Claims 1-2, 6, 15, 17 and 19-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Weber et al. (U.S. 6,003,977).

Weber et al. discloses an ink-jet printhead comprising:

a substrate (fig. 4, element 123, substrate includes element 125), having a rear service having a channel having a predetermined depth (140), wherein a plurality of ink feed holes are formed on a bottom of the channel perforating said substrate (140 to 142);

a nozzle plate (122) coupled to a front service of the substrate, said nozzle plate being perforated by a plurality of chamber-orifice complex holes (142 to 126), wherein each chamber-orifice complex hole (142 to 126) corresponds at least to one of said plurality of ink feed holes (140 and 142);

a plurality of heaters (134) disposed on the front surface of the substrate, each one of said plurality of heaters being located near corresponding ones of said plurality of chamber-orifice complex holes;

wherein each one of said plurality of ink feed holes is formed at a center portion of a corresponding one of said plurality of chamber-orifice complex holes, and each one of said plurality of heaters surrounds corresponding ones of said plurality of ink feed holes (fig. 4, column 5, lines 60-67);

wherein each chamber-orifice has a truncated conical shape, wherein a lower end of said chamber orifice facing said substrate faces the corresponding ink feed hole and heater formed on the substrate and the other end having a smaller diameter faces toward an outside of said ink-jet printhead (fig. 4).

9. Claims 1, 4, 5, 7, 8, 15 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Weber et al.

Weber et al. discloses an ink-jet printhead comprising:

a substrate (fig. 2, element 23, substrate includes element 25), having a rear service having a channel having a predetermined depth (40), wherein a plurality of ink feed holes are formed on a bottom of the channel perforating said substrate (40 to 42);

a nozzle plate (22) coupled to a front service of the substrate, said nozzle plate being perforated by a plurality of chamber-orifice complex holes (42 to 26), wherein each chamber-orifice complex hole (42 to 26) corresponds at least to one of said plurality of ink feed holes (40 to 42);

a plurality of heaters (34) disposed on the front surface of the substrate, each one of said plurality of heaters being located near corresponding ones of said plurality of chamber-orifice complex holes;

wherein each one of said plurality of heaters is formed at a center portion of a region corresponding to one of said plurality of chamber-orifice complex holes and said at least one ink feed hole is formed on one side/ both sides of said heater (fig. 2);

wherein each chamber-orifice has a truncated conical shape, wherein a lower end of said chamber orifice facing said substrate faces the corresponding ink feed hole and heater formed on the substrate and the other end having a smaller diameter faces toward an outside of said ink-jet printhead (fig. 2);

wherein each one of said plurality of heaters is adjacent two of said plurality of holes perforating said substrate, each pair of said plurality of holes perforating said

substrate and each one of said plurality of heaters being disposed at a bottom of one of said plurality of holes perforating said nozzle plate (fig. 2).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 3 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weber et al. as applied to claims 2 and 15 above and further in view of Abe et al. (U.S. 4,914,562).

Weber et al. does not expressly disclose a omega shaped heater structure. Weber et al. teaches that any resistor shape may be used in the invention (column 6, lines 3-6).

Abe et al. discloses an omega shaped heater (fig. 17c).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Abe et al. into the invention of Weber et al. to obtain the invention claimed for the purpose of improving the life of the head by reducing cavitation damage to the heating element (column 14, lines 20-40).

12. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weber et al. as applied to claim 2 and 7 above, and further in view of Heinzl et al.

Weber et al. does not expressly disclose 2 parallel ink channels.

However, Heinzl et al. discloses this (element 15, column 4, lines 20-29).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Heinzl et al. into the invention of Weber et al. to obtain the invention claimed for the purpose of, in the event that one ink channel should become clogged or damaged, still allowing operation of the print head by providing a second ink channel.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian D. Huffman whose telephone number is (703) 308-6556. The examiner can normally be reached on Monday through Friday from 9:30 a.m. to 6:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow, can be reached on (703) 308-3126. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JH

March 25, 2002

John Barlow
Supervisory Patent Examiner
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